

Notice of Allowability	Application No.	Applicant(s)	
	09/434,300	TSUJI, TOSHIHIKO	
	Examiner	Art Unit	
	Gordon J Stock	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to correspondence received 7/22/04.
2. ☒ The allowed claim(s) is/are 4-13 and 15-17.
3. ☒ The drawings filed on 22 July 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input checked="" type="checkbox"/> Other <u>PTOL-413B</u> . |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Justin Oliver on August 30, 2004.

Amended claims:

4.(Currently Amended) A diffractive optical element according to Claim 13, wherein the diffractive surface and the alignment mark are adapted to transmit light rays of the [[first and second wavelengths]] design wavelength λ and the second wavelength λ' .

5.(Currently Amended) A diffractive optical element according to Claim 13, wherein the diffractive surface and the alignment mark are adapted to reflect light rays of the [[first and second wavelengths]] design wavelength λ and the second wavelength λ' .

9.(Currently Amended) A diffractive optical element according to Claim 8, wherein the alignment mark and the [[central position of the metal ring]] center of the diffractive surface are aligned with each other, on the basis of detection of the alignment mark by use of the light of the second wavelength.

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10.(Currently Amended) A projection optical system ~~[[including]]~~ comprising:

a lens; and

a diffractive optical element as recited in Claim 13.

11.(Currently Amended) A projection exposure apparatus for projecting a pattern onto a substrate comprising:

a light source for illuminating the pattern; and

~~[[by use of]]~~ a projection optical system as recited in Claim 10, the projection optical system for projecting to project the pattern onto the substrate.

13.(Currently Amended) A diffractive optical element to be used with a design wavelength λ and providing for detection of an alignment mark using light of a second wavelength, comprising:

a diffractive surface for diffracting predetermined light of ~~[[a]]~~ the design wavelength λ ;
and

an alignment mark formed in a portion of the diffractive surface, wherein, with regard to the predetermined light, a phase difference corresponding to a multiple, by an integer, of the design wavelength λ is produced between (i) a light ray, of the predetermined light, as transmitted through or reflected by the alignment mark and (ii) a light ray, of the predetermined light, as transmitted through or reflected by a portion adjacent to the alignment mark, and that, with regard to second light of ~~[[a]]~~ the second wavelength λ' different from the design wavelength λ , no phase difference corresponding to a multiple, by an integer, of the second

wavelength λ' is produced between (a) a light ray, of the second light, as transmitted through or reflected by the alignment mark and (b) a light ray, of the second light, as transmitted through or reflected by a portion adjacent to the alignment mark[[, whereby a position of the alignment mark is detected using the light of the second wavelength]].

Allowable Subject Matter

2. **Claims 4-13, 15-17** are allowed.

3. The following is an examiner's statement of reasons for allowance:

As to **claim 13**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a diffractive optical element to be used with a design wavelength λ an alignment mark formed in a portion of the diffractive surface having a particular phase difference between the mark and a portion adjacent to the alignment mark with light transmitted or reflected light through or by the mark and adjacent portion at a design wavelength and having a different phase difference with a second wavelength being transmitted or reflected by the alignment mark and portion adjacent in combination with the rest of the limitations of **claims 4-11, 13, 15-17**.

As to **claim 12**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a device manufacturing method detecting a position of an alignment mark formed in a portion of a diffractive surface having a particular phase difference between the mark and a portion adjacent to the alignment mark with light transmitted or reflected light through or by the mark and adjacent portion at a design wavelength and having a different phase difference with a second wavelength being transmitted or reflected by the alignment mark and portion adjacent in combination with the rest of the limitations of **claim 12**.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

4. Applicant's arguments, see Remarks, filed July 22, 2004, with respect to the rejection of the claims under 35 U.S.C. 103(a) are persuasive have been fully considered and are persuasive. In view of the arguments and the amendment of the claims the rejection under 35 U.S.C. 103(a) of claims 4-13, 15-17 has been withdrawn.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 4,636,077 to Nomura et al. (specifically, Figs. 10 and 14)

JP 08083747 A to Katahura Norihiro (specifically, Fig. 1a).

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

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Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

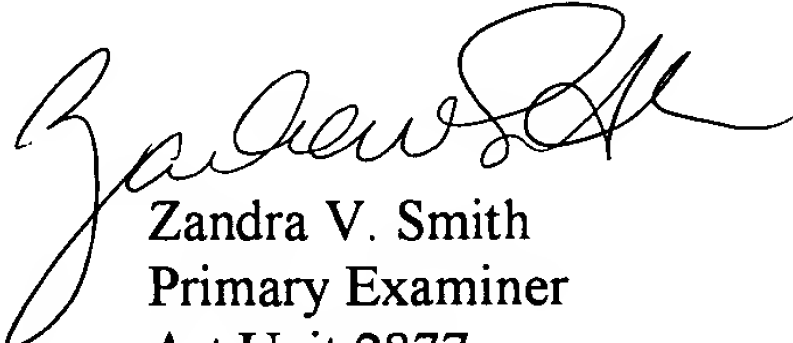
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gs

August 31, 2004



Zandra V. Smith
Primary Examiner
Art Unit 2877